



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-0979; Project Identifier MCAI-2022-00171-T; Amendment 39-22263; AD 2022-25-07]

RIN 2120-AA64

Airworthiness Directives; Embraer S.A. (Type Certificate Previously Held by Yaborã Indústria Aeronáutica S.A.; Embraer S.A.) Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2019-25-16, which applied to certain Embraer S.A. Model ERJ 170-100 LR, -100 STD, -100 SE, and -100 SU airplanes; and Model ERJ 170-200 LR, -200 SU, -200 STD, and -200 LL airplanes. AD 2019-25-16 required revising the existing maintenance or inspection program, as applicable, to incorporate new or more restrictive airworthiness limitations. This AD was prompted by the determination that new or more restrictive airworthiness limitations are necessary. This AD continues to require the actions in AD 2019-25-16 and requires revising the existing maintenance or inspection program, as applicable, to incorporate additional new or more restrictive airworthiness limitations and certain structural modifications, as specified in an Agência Nacional de Aviação Civil (ANAC) AD, which is incorporated by reference. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of February 10, 2020 (85 FR 453, January 6, 2020).

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-0979; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

Material Incorporated by Reference:

- For material incorporated by reference in this AD, contact ANAC, Aeronautical Products Certification Branch (GGCP), Rua Dr. Orlando Feirabend Filho, 230 – Centro Empresarial Aquarius – Torre B – Andares 14 a 18, Parque Residencial Aquarius, CEP 12.246-190 – São José dos Campos – SP, Brazil; telephone 55 (12) 3203-6600; email pac@anac.gov.br; website anac.gov.br/en/. You may find this material on the ANAC website at sistemas.anac.gov.br/certificacao/DA/DAE.asp.

- For Embraer service information identified in this final rule, contact Embraer S.A., Technical Publications Section (PC 060), Av. Brigadeiro Faria Lima, 2170 - Putim - 12227-901 São Jose dos Campos - SP – Brasil; telephone +55 12 3927-5852 or +55 12 3309-0732; fax +55 12 3927-7546; email distrib@embraer.com.br; Internet flyembraer.com.

- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-0979.

FOR FURTHER INFORMATION CONTACT: Allison Buss, Aerospace Engineer, Large Aircraft Section, FAA, International Validation Branch, 2200 South 216th St., Des Moines, WA 98198; telephone 303-342-1090; email allison.j.buss@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2019-25-16, Amendment 39-21015 (85 FR 453, January 6, 2020) (AD 2019-25-16). AD 2019-25-16 applied to certain Embraer S.A. Model ERJ 170-100 LR, -100 STD, -100 SE, and -100 SU airplanes; and Model ERJ 170-200 LR, -200 SU, -200 STD, and 200 LL airplanes. AD 2019-25-16 required revising the existing maintenance or inspection program, as applicable, to incorporate new or more restrictive airworthiness limitations; and added airplanes to the applicability. The FAA issued AD 2019-25-16 to address fatigue cracking of various principal structural elements (PSEs); such cracking could result in reduced structural integrity of the airplane and to prevent safety significant latent failures; such failures, in combination with one or more other specified failures or events, could result in a hazardous or catastrophic failure condition of avionics, hydraulic systems, fire detection systems, fuel systems, or other critical systems. Furthermore, the FAA issued AD 2019-25-16 to address potential ignition sources inside fuel tanks caused by latent failures, alterations, repairs, or maintenance actions; such failures, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane.

The NPRM published in the *Federal Register* on July 28, 2022 (87 FR 45284).

The NPRM was prompted by AD 2022-02-01, effective February 9, 2022, issued by ANAC (referred to after this as the MCAI) (ANAC AD 2022-02-01). The MCAI states that it was prompted by a determination that new or more restrictive airworthiness limitations are necessary.

You may examine the MCAI in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-0979.

In the NPRM, the FAA proposed to continue to require revising the existing maintenance or inspection program, as applicable, to incorporate new or more restrictive airworthiness limitations and certain structural modifications, as specified in ANAC AD 2022-02-01. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received a comment from Horizon Air. The following presents the comment received on the NPRM and the FAA's response.

Request to Update the Required Service Information

Horizon Air requested that the Embraer 170/175 Maintenance Review Board Report, MRB 1621, Revision 17, dated July 01, 2021, referenced in ANAC AD 2022-02-01, be updated to Embraer 170/175 Maintenance Review Board Report, MRB 1621, Revision 18, dated July 4, 2022.

The FAA confirms that it intends to allow the use of applicable later MRB revisions to comply with the requirements of this AD. This AD refers to ANAC AD 2022-02-01 as the appropriate source of service information for accomplishing the required actions. Paragraph (f) of ANAC AD 2022-02-01 accepts the use of later approved revisions of the referenced MRB document for compliance. Therefore,

applicable later approved MRB revisions are acceptable for compliance with this AD. No change to the AD is required.

Conclusion

This product has been approved by the aviation authority of another country and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA reviewed the relevant data, considered the comment received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on this product. Except for minor editorial changes, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

ANAC AD 2022-02-01 describes new or more restrictive airworthiness limitations for airplane structures and the incorporation of certain structural modifications (i.e., reinforcement of left-hand (LH) and right-hand (RH) wing spar II lower; and reinforcement of the wing lower skin chordwise splices of LH and RH wing) before the defined structural modifications points (SMP).

This AD also requires Appendix A - Airworthiness Limitations of EMBRAER 170/175 Maintenance Review Board Report (MRBR), MRB-1621, Revision 14, dated September 27, 2018; and Embraer Temporary Revision (TR) 14-1, dated November 13, 2018, to Part 4-Life-Limited Items, of Appendix A of EMBRAER 170/175 Maintenance Review Board Report (MRBR), MRB-1621, Revision 14, dated September 27, 2018;

which the Director of the Federal Register approved for incorporation by reference as of February 10, 2020 (85 FR 453).

This material is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

The FAA estimates that this AD affects 662 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

The FAA estimates the total cost per operator for the retained actions from AD 2019-25-16 to be \$7,650 (90 work-hours x \$85 per work-hour).

The FAA has determined that revising the existing maintenance or inspection program takes an average of 90 work-hours per operator, although the agency recognizes that this number may vary from operator to operator. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), the FAA has determined that a per-operator estimate is more accurate than a per-airplane estimate.

The FAA estimates the total cost per operator for the new revision to the existing maintenance or inspection program to be \$7,650 (90 work-hours x \$85 per work-hour).

Estimated costs for required actions*

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
New proposed actions	196 work-hours X \$85 per hour = \$16,660	\$98,860	\$115,520	\$76,474,240

*Table does not include estimated costs for revising the existing maintenance or inspection program.

According to the manufacturer, some or all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators. The FAA does not control warranty coverage for affected operators. As a result, the FAA has included all known costs in the cost estimate.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA

amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive 2019-25-16, Amendment 39-21015 (85 FR 453, January 6, 2020); and

b. Adding the following new airworthiness directive:

2022-25-07 Embraer S.A. (Type Certificate Previously Held by Yaborã Indústria Aeronáutica S.A.; Embraer S.A.): Amendment 39-22263; Docket No. FAA-2022-0979; Project Identifier MCAI-2022-00171-T.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

b) Affected ADs

This AD replaces AD 2019-25-16, Amendment 39-21015 (85 FR 453, January 6, 2020) (AD 2019-25-16).

(c) Applicability

This AD applies to all Embraer S.A. Model ERJ 170-100 LR, -100 STD, -100 SE, and -100 SU airplanes; and Model ERJ 170-200 LR, -200 SU, -200 STD, and -200 LL airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 05, Time Limits/Maintenance Checks; 27, Flight controls; 28, Fuel; 52, Doors; 53, Fuselage; 54, Nacelles/pylons; 55, Stabilizers; 57, Wings; 71, Powerplant; and 78, Exhaust.

(e) Unsafe Condition

This AD was prompted by a determination that new or more restrictive airworthiness limitations are necessary. The FAA is issuing this AD to address fatigue cracking of various principal structural elements (PSEs); such cracking could result in reduced structural integrity of the airplane. The FAA is also issuing this AD to address safety significant latent failures; such failures, in combination with one or more other specified failures or events, could result in a hazardous or catastrophic failure condition of avionics, hydraulic systems, fire detection systems, fuel systems, or other critical systems. Furthermore, the FAA is issuing this AD to address potential ignition sources inside fuel tanks caused by latent failures, alterations, repairs, or maintenance actions; such failures, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Retained Revision of the Existing Maintenance or Inspection Program, with No Changes

This paragraph restates the requirements of paragraph (i) of AD 2019-25-16, with no changes. For Model ERJ 170-100 LR, -100 STD, -100 SE, and -100 SU airplanes; and Model ERJ 170-200 LR, -200 SU, -200 STD, and -200LL airplanes; manufacturer serial numbers 17000002, 17000004 through 17000013 inclusive, and 17000015 through 17000761 inclusive: Within 90 days after February 10, 2020 (the effective date of AD 2019-25-16), revise the existing maintenance or inspection program, as applicable, to incorporate the information specified in Part 1-Certification Maintenance Requirements, Part 2-Airworthiness Limitation Inspections (ALI)-Structures, Part 3-Fuel System Limitation Items, and Part 4-Life Limited Items; and EMBRAER Temporary Revision (TR) 14-1, dated November 13, 2018, to part 4-Life Limited Items; of Appendix A of the EMBRAER 170/175 MRBR, MRB-1621, Revision 14, dated September 27, 2018

(EMBRAER 170/175 MRB-1621, Revision 14). The initial compliance time for doing the tasks is at the later of the times specified in paragraphs (g)(1) and (2) of this AD.

(1) Within the applicable times specified in EMBRAER 170/175 MRB-1621, Revision 14. For the purposes of this AD, the initial compliance times (identified as “Threshold” or “T” in EMBRAER 170/175 MRB-1621, Revision 14) are expressed in “total flight cycles” or “total flight hours,” as applicable.

(2) Within 90 days or 600 flight cycles after February 10, 2020 (the effective date of AD 2019-25-16), whichever occurs later.

(h) Retained Restrictions on Alternative Actions, Intervals, and CDCCLs, with No Changes

This paragraph restates the requirements of paragraph (j) of AD 2019-25-16, with no changes. Except as required by paragraph (i) of this AD: After the existing maintenance or inspection program has been revised as required by paragraph (g) of this AD, no alternative actions (e.g., inspections), intervals, or CDCCLs may be used unless the actions, intervals, and CDCCLs are approved as an AMOC in accordance with the procedures specified in paragraph (l)(1) of this AD.

(i) New Revision of the Existing Maintenance or Inspection Program

Except as specified in paragraph (j) of this AD: Comply with all required actions and compliance times specified in, and in accordance with, ANAC AD 2022-02-01, effective February 9, 2022 (ANAC AD 2022-02-01). Accomplishing the revision of the existing maintenance or inspection program required by this paragraph terminates the requirements for Part 2 - Airworthiness Limitation Inspections (ALI)-Structures specified in paragraph (g) of this AD only.

(j) Exceptions to ANAC AD 2022-02-01

(1) Where ANAC AD 2022-02-01 refers to its effective date, this AD requires using the effective date of this AD.

(2) The “Alternative method of compliance (AMOC)” section of ANAC AD 2022-02-01 does not apply to this AD.

(3) Where paragraph (b)(1) of ANAC AD 2022-02-01 specifies incorporating all airworthiness limitations in Part 2 of the service information specified in paragraph (b)(1) of ANAC AD 2022-02-01, for this AD, do not incorporate the threshold and interval for maintenance review board report (MRBR) task number 57-30-002-0002, “Enhanced Wingtip to Wing Spar Attachments – Internal.”

Note 1 to paragraph (j)(3): AD 2022-11-51, Amendment 39-22074 (87 FR 33623, June 3, 2022) (AD 2022-11-51), requires, among other actions, incorporating alternate thresholds and intervals for MRBR task number 57-30-002-0002. The airplanes affected by MRBR task number 57-30-002-0002 are identified in paragraph (c) of AD 2022-11-51.

(k) New Provisions for Alternative Actions and Intervals

After the existing maintenance or inspection program has been revised as required by paragraph (i) of this AD, no alternative actions (e.g., inspections), intervals, and CDCCLs are allowed unless they are approved as specified in paragraph (f) of ANAC AD 2022-02-01.

(l) Additional FAA AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs)*: The Manager, Large Aircraft Section, International Validation Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the Large Aircraft Section, International Validation Branch, send it to the attention of the person identified

in paragraph (m) of this AD. Information may be emailed to: 9-AVS-AIR-730-AMOC@faa.gov.

(i) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(ii) AMOCs approved previously for AD 2019-25-16 are approved as AMOCs for the corresponding provisions of paragraph (g) of this AD.

(2) *Contacting the Manufacturer*: For any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, Large Aircraft Section, International Validation Branch, FAA; or ANAC; or ANAC's authorized Designee. If approved by the ANAC Designee, the approval must include the Designee's authorized signature.

(3) *Required for Compliance (RC)*: Except as required by paragraph (l)(2) of this AD, if any service information referenced in ANAC AD 2022-02-01 contains steps in the Accomplishment Instructions or figures that are labeled as RC, the instructions in RC steps, including subparagraphs under an RC step and any figures identified in an RC step, must be done to comply with this AD; any steps including substeps under those steps, that are not identified as RC are recommended. The instructions in steps, including substeps under those steps, not identified as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the instructions identified as RC can be done and the airplane can be put back in an airworthy condition. Any substitutions or changes

to instructions identified as RC require approval of an AMOC. If a step or substep is labeled “RC Exempt,” then the RC requirement is removed from that step or substep.

(m) Additional Information

For more information about this AD, contact Allison Buss, Aerospace Engineer, Large Aircraft Section, FAA, International Validation Branch, 2200 South 216th St., Des Moines, WA 98198; telephone 303-342-1090; email allison.j.buss@faa.gov.

(n) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) Agência Nacional de Aviação Civil (ANAC) AD 2022-02-01, effective February 9, 2022.

(ii) [Reserved]

(3) The following service information was approved for IBR on February 10, 2020 (85 FR 453, January 6, 2020).

(i) Appendix A - Airworthiness Limitations of EMBRAER 170/175 Maintenance Review Board Report (MRBR), MRB-1621, Revision 14, dated September 27, 2018.

(ii) Embraer Temporary Revision (TR) 14-1, dated November 13, 2018, to Part 4-Life-Limited Items, of Appendix A of EMBRAER 170/175 Maintenance Review Board Report (MRBR), MRB-1621, Revision 14, dated September 27, 2018.

(4) For ANAC AD 2022-02-01, contact ANAC, Aeronautical Products Certification Branch (GGCP), Rua Dr. Orlando Feirabend Filho, 230 – Centro Empresarial Aquarius – Torre B – Andares 14 a 18, Parque Residencial Aquarius, CEP 12.246-190 – São José dos Campos – SP, Brazil; telephone 55 (12) 3203-6600; email

pac@anac.gov.br; website anac.gov.br/en/. You may find this ANAC AD on the ANAC website at sistemas.anac.gov.br/certificacao/DA/DAE.asp.

(5) For Embraer material, contact Embraer S.A., Technical Publications Section (PC 060), Av. Brigadeiro Faria Lima, 2170 - Putim - 12227-901 São Jose dos Campos - SP – Brasil; telephone +55 12 3927-5852 or +55 12 3309-0732; fax +55 12 3927-7546; email distrib@embraer.com.br; Internet flyembraer.com.

(6) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(7) You may view this material that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued on November 29, 2022.

Christina Underwood, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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